

Wiseman, Donald H.

S/N: 10/707,909

In the Claims

What is claimed is:

1. (Currently Amended) A crystal growing apparatus comprising:  
a receptacle constructed to receive a material selected to grow a crystal; and  
an induction heater having a Litz coil and constructed to heat the material; and  
a housing positioned about the induction heater and constructed to receive the  
receptacle therein.
2. (Original) The crystal growing apparatus of claim 1 further comprising a water passage extending through the induction heater and constructed to allow a water flow therethrough to cool the Litz coil.
3. (Original) The crystal growing apparatus of claim 1 further comprising a controller electrically connected to a pair of ends of the Litz coil and constructed to pass an electrical signal therethrough.
4. (Original) The crystal growing apparatus of claim 1 further comprising a rod constructed to initiate a pull of a crystal from the material.
5. (Original) The crystal growing apparatus of claim 1 wherein the induction heater further comprises a hose constructed to receive the Litz coil therein.
6. (Currently Amended) The crystal growing apparatus of claim 5 wherein the  
further comprising a housing is positioned about the hose and further comprises at least one leg  
constructed to be attached to the hose, the leg having an end which extends past an end of the housing.
7. (Original) The crystal growing apparatus of claim 6 further comprising at least one cable tie mount passing through the at least one leg and connected to the hose.
8. (Original) The crystal growing apparatus of claim 1 wherein the reservoir is constructed of a material that is responsive to induction heating.

Wiseman, Donald H.

S/N: 10/707,909

9. (Currently Amended) An induction heater comprising:  
a casing having a first end and a second end;  
a coil of woven strands of wire having a first end and a second end and passing  
through the casing; and

a lead connected to an end of the coil of woven strands of wire and having a  
passage therethrough, the passage constructed to provide coolant to a space between the coil of  
woven strands of wire and the casing; and

at least one support leg extending along a coiled portion of the casing and  
constructed to retain the casing in a coiled position.

10. (Original) The induction heater of claim 9 wherein the individual wires of the  
coil of woven strands of wire are electrically isolated from one another along a length of the  
individual wires.

11. (Original) The induction heater of claim 9 wherein the coil of woven strands of  
wire is a Litz coil.

12. (Currently Amended) The induction heater of claim 9 further comprising at least  
one cable tie passing through a the support leg and engaged with at least a portion of the casing  
wherein the at least one cable tie maintains a spacing between an adjacent winding of the coil of  
woven strands of wire.

13. (Currently Amended) The induction heater of claim 9 further comprising a  
housing having an opening therethrough and extending about the casing and a portion of the at  
least one support leg.

14. (Original) The induction heater of claim 13 further comprising a fitting  
constructed to secure an end of the casing to the housing.

15. (Original) The induction heater of claim 9 further comprising a first and a  
second connector, each connector constructed to electrically connect a respective end of the coil  
of woven strands of wire to a power source.

Wiscman, Donald H.

S/N: 10/707,909

16. (Original) The induction heater of claim 9 incorporated into a crystal growing device and constructed to heat a crystal growing material.
17. (Currently Amended) A method of manufacturing a crystal grower comprising:  
providing a reservoir to receive a crystal growing material therein; and  
coiling a Litz coil to receive the reservoir within a coiled portion of the Litz coil;  
and  
attaching at least one leg to the coiled portion of the Litz coil to maintain a coiled orientation of the coiled portion of the Litz coil about the reservoir.
18. (Original) The method of claim 17 further comprising energizing the coil of wire to heat the crystal growing material in the reservoir.
19. (Original) The method of claim 17 wherein providing a reservoir includes forming a reservoir of a material resistant to induction heating.
20. (Original) The method of claim 17 further comprising preventing atmospheric contamination of the crystal growing material by enclosing the reservoir.
21. (Currently Amended) A method of growing a crystal comprising the steps of:  
placing a crystal growing material in a vessel; and  
energizing a coil of wire that has Litz characteristics and that is wound about the vessel and held in a coiled position by a housing formed thereabout having Litz characteristics.
22. (Original) The method of claim 21 further comprising circulating coolant about the coil of wire to cool the coil of wire.
23. (Original) The method of claim 21 further comprising pulling a crystal fiber from the crystal growing material in the vessel.
24. (Original) The method of claim 21 further comprising achieving a heating efficiency of at least 75%.

Wiseman, Donald H.

S/N: 10/707,909

25. (Original) The method of claim 21 wherein the step of energizing includes no more than a 25% energy loss by the coil of wire.

26. (Original) The method of claim 25 wherein the step of energizing includes no more than an 18% energy loss by the coil of wire.

27. (Original) The method of claim 21 wherein the step of energizing results in induction heating of the vessel.

28. (Original) The method of claim 21 wherein the step of energizing results in induction heating of the crystal growing material.